SNAP CCD Analysis, Fully supported CCD
Results summary
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| | | Material | Max. Value | Notes |
|---|---|---|---|---|
| **Case 1** | **AlN substrate, Square hole** | | | |
| | Max. Z-displacement | - | 24 microns | at the corner edge |
| | Max (VM) stress | Moly | 347 Mpa | in the corner of the hole in Moly block |
| | CCD Max stress | - | 26 Mpa | near a symmetry boundary--not sure how accurate this is |
| | Max Substrate stress | AlN | 51 Mpa | on the interface of the EA9361 joint |
| | EA9361 joint | - | 37 Mpa | at the corner edge, but averages closer to 18-20 Mpa around |
| | Epotek joint | - | 7.5 Mpa | at corner edge, mainly due to bending (not shear) |
| **Case 2** | **Si substrate, Square hole** | | | |
| | Max. Z-displacement | - | 28 microns | at the corner edge |
| | Max (VM) stress | Moly | 325 Mpa | in the corner of the hole in Moly block |
| | CCD Max stress | - | 17 Mpa | near a symmetry boundary--not sure how accurate this is |
| | Max Substrate stress | Si | 64 Mpa | on corner edge, but averages around 35 Mpa overall |
| | EA9361 joint | - | 36 Mpa | at the corner edge, but averages closer to 18-20 Mpa around |
| | Epotek joint | - | 6.6 Mpa | at corner edge, mainly due to bending (not shear) |
| **Case 3** | **AlN substrate, Square hole with Fillets** | | | |
| | Max. Z-displacement | - | 25 microns | at the corner edge |
| | Max (VM) stress | Moly | 305 Mpa | in the fillet of the hole in Moly block |
| | CCD Max stress | - | 25 Mpa | near a symmetry boundary--not sure how accurate this is |
| | Max Substrate stress | AlN | 50 Mpa | on the interface of the EA9361 joint |
| | EA9361 joint | - | 34 Mpa | at the corner edge, but averages closer to 18 Mpa around |
| | Epotek joint | - | 7.4 Mpa | at corner edge, mainly due to bending (not shear)<br>(See the blowup of the corner--low stresses in the middle, high-stress on the outer surfaces |
| **Case 4** | **Si substrate, Square hole with Fillets** | | | |
| | Max. Z-displacement | - | 30 microns | at the corner edge |
| | Max (VM) stress | Moly | 276 Mpa | in the fillet of the hole in Moly block |
| | CCD Max stress | - | 15 Mpa | near a symmetry boundary--not sure how accurate this is |
| | Max Substrate stress | Si | 64 Mpa | on corner edge, but averages around 35 Mpa overall (no change from first analysis |
| | EA9361 joint | - | 35 Mpa | at the corner edge, but averages closer to 18 Mpa around |
| | Epotek joint | - | 6.6 Mpa | at corner edge, mainly due to bending (not shear) |